REMARKS

Claims 1-10 are pending in the application. Claims 3, 5, 8 and 10 have been deemed to recite allowable subject matter. Claims 1 and 6 are being amended.

Claims 1, 4, 6 and 9 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Ovadia (US6546557) in view of Fawaz (US6654374), further in view of Nash (US4577312). The rejection is respectfully traversed.

A brief discussion relating to the present application may be helpful. In time division multiple access (TDMA) optical systems, multiple optical devices transmit toward a single optical receiver, each optical device bursting its information onto the common physical medium. Transmissions from different sources are made possible by offsetting, in time, the burst from each device so that none of the bursts overlaps in time with any other burst from any source.

To provide redundancy protection, SONET elements are typically arranged in ring configurations which provide line or path protection switching. With such protection switching, data that is transmitted on a working path is independent and unsynchronized with respect to data transmitted on a protection path. Generally, so as not to incur data loss in a failure situation, this requires that multiple timeslots or frames from each path or line be stored in a buffer prior to performing an analysis of which data is valid or corrupted. Such buffering adds undesirable complexity and latency.

The present approach provides efficient and fast recovery on a timeslot basis of redundant data transmitted from remote terminals to a burst manager in a passive optical network or other network. Accordingly, communication between a burst manager and plural remote terminals occurs over a first passive optical network (PON) and a second PON, with each PON having a downstream portion and an upstream portion. A common synchronization signal is transmitted from the burst manager to the plural remote terminals over both downstream PON portions and redundant burst data from the plural remote terminals is transmitted over both upstream PON portions to the burst manager. The burst data for each remote terminal is delayed on the first and second PONs by corresponding first and second delays. The first delay includes a first ranging delay and the second delay includes a second ranging delay wherein the first and second ranging delays for each remote terminal are adjusted with respect to the common synchronization signal such that the burst data for any particular remote terminal transmitted on the first PON arrives at

the burst manager simultaneously with the redundant burst data for that particular remote terminal transmitted on the second PON.

Ovadia relates to a method and system for enhancing digital video transmission to a set-top box. Fig. 1a shows a master headend 10 that is connected to primary hubs 12a-12c over a SONET ring. Fawaz relates to a method and apparatus to reduce jitter in packet switched networks. Fig. 4 shows a dual ring network 104.

The Examiner looks to Nash for disclosure of a test pattern transmitted from a network services complex (NSC) 123 to a pair of wideband terminals 100, 101 (Fig. 1). Several narrowband channels are established independently between the terminals. Multiplexing equipment at the terminals demultiplexes the customer wideband information into several narrowband signals which are simultaneously transmitted over the narrowband channels. Prior to transmitting any customer data over the narrowband channels, the test pattern is sent by the NSC to measure delay (time frame misalignment) that may occur between the demultiplexed signals. The NSC is located between the terminals at a toll switching office and facilitates establishment of the narrowband channels. The NSC computes any frame offset and introduces delay in selected ones of the narrowband channels to re-correlate the data into its original pattern. (Col. 1, lines 54-68; col. 3, lines 5-13; col. 4, lines 12-23.)

Nash taken with Ovadia and Fawaz does not provide or suggest the invention as claimed in claims 1 and 6. Data transmitted on the several narrowband channels does not arrive at the NSC simultaneously. Rather, the NSC is used to introduce delay in selected ones of the narrowband channels so that data sent from one terminal arrives at the other terminal re-correlated. This is clearly shown in Fig. 12 of Nash and described at column 14, lines 13-28, where it is noted that "delay encountered on the individual narrowband channels may vary from channel to channel between the end terminals and the network services complex due to routing." That is, the delay adjustment in Nash is done at the NSC, which is located between the terminals, so that the delay-adjusted data in one narrowband can arrive at the other terminal re-correlated with data arriving from other narrowband channels.

In contrast with the intermediate insertion of delay of Nash, for the present invention delay is adjusted at the source of the data transmissions, that is, at the remote terminals. As recited in claims 1 and 6, burst data from the plural remote terminals is transmitted over both

upstream PON portions to the burst manager, the burst data for each remote terminal being delayed on the first PON by a corresponding first delay and being delayed on the second PON by a corresponding second delay, the delays for each remote terminal adjusted with respect to a common synchronization signal such that the burst data for any particular remote terminal transmitted on the first PON arrives at the burst manager simultaneously with the burst data for that particular remote terminal transmitted on the second PON. Nash does not teach or suggest a system or method in which "burst data for any particular remote terminal transmitted on the first PON arrives at the burst manager simultaneously with the burst data for that particular remote terminal transmitted on the second PON" as recited in claims 1 and 6.

Another aspect of the invention that distinguishes from Nash relates to the nature of the data being transmitted. In Nash, the data carried in the several narrowband channels (e.g., CH0-CH4 in Fig. 12) is not the same data for each channel. Rather, each channel carries a different portion of the demultiplexed wideband signal. In contrast, the present invention relates to transmission of redundant data along two paths such that it arrives simultaneously at the burst manager. Claims 1 and 6, as currently amended, recite in part "each remote terminal transmitting redundant burst data over both upstream PON portions to the burst manager." Accordingly, "the burst data for any particular remote terminal transmitted on the first PON arrives at the burst manager simultaneously with the redundant burst data for that particular remote terminal transmitted on the second PON." Reconsideration of the rejection is respectfully requested.

Claims 2 and 7 have been rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Ovadia, Fawaz and Nash as applied to claims 1 and 6 above, taken with de Boer (US6616350). There is nothing disclosed in de Boer that supplies teachings or suggestions absent in the cited references to find claims 2 and 7 unpatentable, in view of the remarks noted above with respect to the rejection of claims 1 and 6. Reconsideration of the rejection is respectfully requested.

Information Disclosure Statement

An Information Disclosure Statement (IDS) is being filed concurrently herewith. Entry of the IDS is respectfully requested.

CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

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